

## REMARKS

Claims 1-3, 7, 8, 13-27 and 29-31 remain pending. Claims 8, 21-27, 29 and 30 have been determined allowable over the prior art of record and claims 3 and 13 have been determined as reciting patentable subject matter. Claim 3 has been rewritten in independent form and independent claims 1 and 7 have been amended to distinguish over the prior art of record. No new matter was added. Accordingly, Applicants respectfully submit that the present application is in condition for allowance.

### **I. Claim Rejections - 35 USC §102(b)**

*In the FINAL Office Action dated April 19, 2011, claims 1, 7, 17, 18, 20 and 31 are rejected under 35 USC §102(b) as being anticipated by WO 00/31310 of Michaluk et al.*

Independent claim 1 has been amended to include the limitation formerly stated in dependent claim 2. No new matter was added.

Independent method claim 7 has been amended with a limitation recited in allowable method claim 8. No new matter was added.

Accordingly, Applicants respectfully request reconsideration and removal of the §102(b) rejection of independent claims 1 and 7 and claims 17, 18, 20 and 31 which depend therefrom.

### **II. Claim Rejections - 35 USC §103(a)**

*In the FINAL Office Action dated April 19, 2011, claims 2, 14-16 and 19 are rejected under 35 USC §103(a) as being obvious over WO 00/31310 of Michaluk et al.*

Dependent claims 15 and 16 have been amended to depend from independent claim 3, and claim 19 depends from independent method claim 7. Claims 15 and 16 are submitted as being patentable over Michaluk et al. for the same reasons previously determined that claim 3 is

patentable over the Michaluk et al. reference. Claim 19 is submitted as being patentable over Michaluk et al. for the same reasons method claim 7 is submitted as being patentable since it has been amended with a limitation cited in allowable method claim 8.

Accordingly, the following discussion is directed at claims 1, 2, 14 and 31 (with all other claims being considered allowable for reasons already stated by the Examiner).

Claim 1 has been amended with the limitation formerly stated in claim 2. Thus, claim 1 requires the tantalum sputtering target having a structure of which 20% or more than 20% is non-recrystallized.

Applicants respectfully submit that claim 1, as amended, of the present application is not obvious in view of WO '310 which discloses a "sputtering target" produced by forging a raw material to form a slab, annealing, rolling to form a plate, final annealing, and machining. WO '310 teaches to one of ordinary skill in the art that the sputtering target has "complete recrystallization".

One of the above stated process steps taught and required by WO '310 is final annealing of a rolled plate. Page 19, line 23, to page 20, line 8, of WO '310 clearly requires: "the final anneal temperature is preferably kept at 950-1000°C, more preferably 1000°C" for "flat products"; and "final anneal temperature is preferably 950-1100°C, and more preferably is 1050°C" for "round processing". Accordingly, if one of ordinary skill in the art were to follow the teachings of WO '310 to produce a sputtering target, the end result would be a completely recrystallized structure and not a sputtering target having 20% or more of non-recrystallized structure as required by claim 1, as amended, of the present application.

WO '310 not only fails to disclose the limitations of claim 1 but also teaches-away from the sputtering target of claim 1. "Teaching away" is the antithesis of the art suggesting that the person of ordinary skill in the art go in the claimed direction. Essentially, "teaching away" is a

per se demonstration of lack of obviousness. In re Fine, 873 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Here, WO '310 clearly requires complete recrystallization for a sputtering target.

Table 3 on pages 21 and 22 of WO '310 discloses annealed plates being 98% or 99% recrystallized. However, this far exceeds the requirements of claim 1, as amended, and clearly teaches that the sputtering target should be completely recrystallized, or as close as possible (98%, 99%) to completely recrystallized thereby teaching away from claim 1 of the present application.

In the FINAL Office Action, claim 18 of WO '310 is relied upon for teaching a sputtering target 80% recrystallized (and therefore 20% non-recrystallized). Applicants respectfully submit that claim 18 is being improperly interpreted and that the teachings of WO '310 directs one of skill in the art to completely recrystallize the structure (to as close to 100% as possible, such as 98% and 99%).

WO '310 is a publication of a PCT application, as filed. Claims 1 and 3 of this PCT application publication are directed to a raw material, and claim 18, which depends from claim 3 and base claim 1, is directed to a sputtering target. However, claims are read in light of the specification. The disclosure provided by WO '310 is that "final products" can be made from raw material. For example, page 2, lines 9-12, of WO '310 states that "A feature of the present invention is to provide a high purity tantalum" ... "Another feature is to provide articles, products and/or components containing the high purity tantalum." One of the "final products" disclosed by WO '310 is "sputtering targets". For example, page 3, lines 3-4, of WO '310 clearly states that "The present invention also relates to a high purity tantalum, e.g., suitable for use as a sputtering target, having a fully recrystallized grain size".

WO '310 clearly describes a high purity tantalum metal raw material that is subjected to certain required processing to ultimately manufacture a sputtering target and that the target does

not consist simply of the raw material high purity tantalum metal without the required processing. For example, see page 3, lines 8-11, of WO '310 which states that "The present invention further relates to manufacturing plate and sheet from the above-mentioned tantalum by flat-forging the tantalum, machining into rolling slabs, rolling into plate or sheet, then annealing the plate or sheet ... Final products such as sputtering targets can be then machined from the annealed plate or sheet." Thus, only after the tantalum metal is subjected to the above process steps, including final annealing, is a sputtering target created. The terse language of claim 18 of WO '310 does not alter this clear teaching to one of ordinary skill in the art provided by the specification of WO '310. The overly broad interpretation of claim 18 of WO '310 stated in the FINAL Office Action is not supported by the teachings of WO '310.

Further, WO '310 states on page 9, lines 23-26, that "The high purity tantalum ingot can then be thermomechanically processed to produce high purity tantalum containing product. The fine, and preferably fully recrystallized, grain structures and/or uniform texture are imparted into the product through a combination of cold and/or warm working and in-process annealing."

WO '310 specifically discusses the formation of a sputtering target starting on page 10, line 14. For example, WO '310 requires: cleaning of surfaces of the raw material high purity tantalum metal; flat forging into rolling "slabs"; annealing to achieve uniform recrystallization; rolling to form at least one "plate"; final annealing; cleaning; and machining into a sputtering target of desired dimensions.

With respect to "final annealing", WO '310 states that "with respect to annealing of the tantalum plate, preferably this annealing is in a vacuum annealing at a temperature for a time sufficient to achieve complete recrystallization of the tantalum metal."

Accordingly, Applicants respectfully request that the disclosure of the specification of WO '310 be considered when interpreting claim language utilized by WO '310. The raw

material metal must be forged, annealed, rolled and subject to final annealing and machining before a “sputtering target” comes into existence. With respect to the sputtering target, WO ‘310 discloses a sputtering target which is completely recrystallized.

Thus, WO ‘310 teaches a “sputtering target” with “complete recrystallization” or very close to complete recrystallization.

Accordingly, Applicants respectfully submit that independent claim 1, as amended, of the present application is patentable and non-obvious over WO ‘310. Applicants respectfully request reconsideration and removal of the obviousness rejection.

With respect to dependent claim 2, as amended, Applicants respectfully submit that this claim further distinguishes over the cited prior art reference. Claim 1 of the present application requires the non-recrystallized structure to be either: (i) 20%; or (ii) more than 20%. Dependent claim 2 has been amended to further limit claim 1 such that the non-recrystallized structure is specifically required to be: (ii) more than 20% (and not (i) 20%). No new matter was added; for example, see the limitation recited in claim 2, as filed, of the present application. WO ‘310 certainly fails to disclose or make obvious a sputtering target have a structure more than 20% non-recrystallized.

For all the above reasons, Applicants respectfully request reconsideration and removal of the obviousness rejection.

### **III. Allowable Subject Matter**

In the FINAL Office Action dated April 19, 2011, method claims 8, 21-27, 29 and 30 are indicated as being allowable and claims 3 and 13 are indicated as reciting patentable subject matter.

Claim 3 has been re-written as an independent claim and is respectfully submitted as being in condition for allowance.

#### **IV. Conclusion**

In view of the above amendments and remarks, Applicants respectfully submit that the claim rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Amendment to our deposit account no. 08-3040.

Respectfully submitted,  
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